THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888

No. 36. SEPTEMBER 3, 1949 VOL. 61.

BLOOD TRANSFUSION IN ANIMALS: ITS THEORY AND PRACTICE

DISCUSSION BY THE CENTRAL VETERINARY SOCIETY *

Opening Contributions

I.—By J. W. H. HOLMES

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My contribution is based on the limited use of transfusions under general practice conditions since 1944. I was at that time disturbed concerning the treatment of distemper which in pre-war days had appeared so simple in early cases. Consideration of the problem led to the view that blood from recovered patients would be helpful in the treatment of fresh cases. I searched the clinical literature and found specially interesting and helpful articles by Amadon [1] and Robertson [2]. These and other records showed that the task was possible and that this procedure had been used for a variety of conditions, including distemper, particularly in America. The main feature which encouraged one to proceed was that blood groups were not of importance in the dog and in cattle. My original idea was to explore the possibility in the dog but I was thus stimulated to try transfusions in cattle also and I now use it more in cattle than in the dog. The literature consulted gave details of methods of direct and indirect transfusions in cattle under field conditions but those referring to the dog were more suitable for application in hospitals. It was soon found possible, however, to adopt modifications to meet personal requirements and I now use the following methods.

CATTLE

Donor and recipient are in the same herd so there is no danger of bringing in fresh diseases from outside. Any healthy cow may be used as donor though naturally one selects the quieter type of animal and when transfusing calves the dam generally has been chosen.

The head of the donor is preferably fastened up short on a halter so that neck ropes, chains or yokes are out of the way. Bulldogs are applied to keep the animal still and the assistant stands on one side of the cow holding the adjacent horn and the bulldogs while the collector works on the opposite side. I prefer to have the assistant on the cow's left side and make the collection from the right jugular. The vein is raised by means of a throat rope which is held firm throughout either by the operator or an additional attendant. The skin is sterilised and the needle (13 BWG × 1¾ inch or larger bore) is inserted into the vein, using a syringe as a handle. Once in the vein the syringe is disconnected and the blood allowed to flow into a bottle containing sodium citrate solution. The bottles used are old calcium borogluconate containers of 400 c.c. capacity and an adequate supply of these, sterilised and filled with sterile water, is always carried in the car in readiness for glucose administration, collection of milk and urine samples and for use in blood transfusion. The sodium citrate is carried in 5-grain tablets and two tablets are used for each 100 c.c. of blood to be collected. The total tablets are dissolved in a little of the sterile water just prior to collection and the bottle is shaken gently throughout.

Administration is by gravity, using a Simplex Apparatus, and offers no difficulty except in the case of very young sick calves. Collection of blood samples or intravenous injection in young healthy calves is a simple matter and can be done without a throat rope, but the ailing calf a few days old rapidly becomes hidebound and in consequence presents special difficulties. In addition, small calves are difficult to keep still and for this reason I always try to have one person to hold the calf and one for the bottle while I hold the needle. The simplest method is for attendant No. I to sit on the floor with his legs straight out covered with a clean thick sack. The calf is laid on its left side with its neck stretched over the attendant's right thigh. The hair is clipped and the vein raised either by the finger or a throat rope and a small needle (19 BWG × ¾ inch) is inserted, using a syringe as a handle. The second assistant holds the bottle. Dose used for calves 400 c.c.

I have in a few instances given the injection to calves using the radial vein. A rubber parturition overall should be worn when collecting and administering blood in cattle.

DOGS

The transfusions I have given in dogs have all been on owners' premises or in the surgery with the owner present. Breeders and pet owners present two different problems. The breeder may own both donor and recipient while in the case of the pet dog it will generally be necessary to obtain blood from an outside source. This raises the question of the possibility of introducing disease by transfusion although I have not seen this occur.

The collection may be made from the jugular, radial or external saphena veins. The site is clipped and sterilised and a little local anaesthetic is injected, using a dental type syringe with a fine needle. This greatly facilitates the subsequent introduction of the larger needle into the vein. The vein is raised by means of an elastic tourniquet and the needle (19 BWG × ¾ inch or larger bore) attached to an excentric nozzle syringe is glided into the vein. The syringe is disconnected and the blood allowed to drip into a sterilised cup containing sodium citrate solution (10 grains for each 100 c.c. of blood). It is usual under these conditions to collect 80 to 100 c.c. The jugular vein gives the best flow but it is sometimes difficult in fat

* At the meeting held at the Royal Veterinary College, on February 3rd, 1949.

animals. When collecting from the radial vein the flow may be hastened by alternately flexing and extending the carpus.

The blood is administered via the radial or external saphena vein using a 10 cc. excentric nozzle syringe to take it from the cup, or it may be poured from the cup into a sterile bottle and given by gravity, using a Simplex Apparatus. It is of course necessary to have the needle attached to an empty syringe when inserting into the vein of the recipient.

Two modifications of the above have occasionally been used:

(1) *The Use of Plasma.*—Blood from one or several donors is collected and citrated. It may then be centrifuged or it may be allowed to stand over night in a sterile cork bottle for sedimentation. The plasma is then withdrawn and may be given subcutaneously or intravenously.

(2) *The Use of Serum.*—Blood is collected from one or more donors without citration. It is allowed to stand over night and the serum is then withdrawn and given intravenously or subcutaneously.

The literature contains several references ([3], [4] and [5]) to the establishment and management of blood banks in canine practice and in general it is stated that citrated blood may be stored in the refrigerator and used with safety up to five to ten days after collection. In our practice the call for blood transfusion in dogs has not been sufficiently great to warrant the maintenance of a blood bank and I have consequently stored blood on a few occasions only.

Undesirable Features of Blood Transfusion

I have not so far observed any undesirable feature in blood transfusion in cattle.

In the dog one alarming mishap occurred. Due to an error, five sodium citrate tablets were put in the cup instead of two, and to make matters worse the donor bled badly and only about 20 c.c. of blood was collected. Immediately the first syringeful (10 c.c.) was given the animal (a whippet) went stiff, stopped breathing, defaecated and passed urine and at the same time gave a howling yell—all symptoms similar to those observed after the administration of prussic acid. Respirations recommenced and the dog became normal in a few moments.

On another occasion the recipient (golden retriever) showed staggering drunken movements for a few minutes after transfusion but the symptoms quickly passed off.

The only other incident was in the case of a fox'terrier bitch which showed alarming dyspnoea after the first few c.c. and in consequence the transfusion was stopped. The animal had pneumonia, subsequently proved at *post-mortem* examination, and in consequence should not have been transfused.

Indications

The most obvious indications are haemorrhage and shock and reports of its use in these conditions are good. Johnstone [6] reports good results in cattle in haemorrhage and post-parturient haemoglobinuria. My own interest, however, has been largely confined to its possible application in the treatment of infectious diseases. It is obvious that such cases should be treated as early as possible and transfusions should not be reserved as a final desperate effort to save life.

I am of the opinion that it is a valuable measure in the treatment of scours in very young calves and in early cases the animal may be well in 12 to 24 hours. It has also been used with success in very sick calves where the prognosis was considered decidedly grave.

In distemper in the dog, using blood from recovered patients, the results have been very variable—sometimes good to the stage of being spectacular and in other cases disappointing. In some of the disappointing cases the transfusion was given too late.

Two cases of (?) leptospiral jaundice have been treated but both were extremely ill and died.

Northup [7] and Bower [8] mention the use of transfusions in the treatment of cat distemper, collecting from the jugular of the nembutalised cat, but it appears to present too many difficulties under ordinary practice conditions.

Contra-Indications

The main contra-indication is pneumonia and transfusion in these cases is likely to embarrass heart and lungs.

In conclusion, I am satisfied that blood transfusion is a practical possibility in cattle and dogs and that it can serve a very useful purpose; I am equally convinced, however, that it would be a very simple matter to develop into a crank on the subject. I should be very interested to know the present views of those clinicians who reported on the subject seven to ten years ago.

References

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2 Robertson, H. J. (1941.) *J. Amer. vet. med. Ass.* **98.** 482-494.
3 Edit. Note, *N. Amer. Vet.* (1940.) p.212.
4 Medcalf, F. L., & Stahl, W. E. (1942.) *J. Amer. vet. med. Ass.* **101.** 265-271.
5 Williams, R. E. (1947.) *Vet. Rec.* **59.** 637-638.
6 Johnstone, R. W. (1946.) *Ibid.* **58.** 271-272.
7 Northup, M. A. (1946.) *N. Amer. Vet.* **27.** 226-229.
8 Bower, C. H. (1938.) *J. Amer. vet. med. Ass.* **45.** 136-144.

II.—By H. H. Holman

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The title of this discussion seems to me to be subdivisible into three main divisions, the theory and dynamics of the conditions requiring transfusion, the important clinical aspect, and the importance or unimportance of blood groups. I will restrict my remarks to the dynamics of the condition in which transfusion is indicated.

If we take a blood sample from a horse and prevent it from clotting by adding some anticoagulant such as potassium oxalate, then, if we spin it in a centrifuge for a few minutes, the blood will settle into three layers, a buff coloured layer of plasma on top, a layer of packed red cells at the bottom, and a thin white layer between the other two, consisting of white cells.

If the blood is contained in a haematocrit tube, which is divided along its length into a hundred divisions, then it is easy to read the percentage volume that the red cells occupy. In the case of healthy horses this is commonly 26, 27 or 28 per cent. The proportion of red cells to plasma may, however, be altered in disease. In some diseases the proportion of plasma appears to be increased and we have anaemia, in other diseases the proportion of plasma appears to be decreased and we have anhydraemia. Dominant among the causes of anhydraemia is a debatable syndrome known as secondary shock.

Secondary shock can be due to a variety of causes and some examples of this condition in the horse can be seen in the table. We can see included in the list a bacterial

exotoxin, two simple organic poisons, a physiological product, and two conditions equivalent to obturation of the bowel. All these are in addition to the more generally accepted cause of shock, which is extensive trauma in its many forms, including compression, burns and haemorrhage.

Poison	*Haematocrit Reading Before Dosing*			*After Dosing*
Cl. welchii Type D.	27	26	28	2 hrs. 26; 4 hrs. 35; 7 hrs. 39; 11 hrs. 43.
Oxalates			28	6 hrs. 27; 9 hrs. 50.
Pot. Cyanide		26	28	1 hr. 45; 2 hrs. 42.
Histamine	30	34	35	1 hr. 35; 2 hrs. 48; 4 hrs. 33; 6 hrs. 33.
Natural Disease				
Grass Sickness	39; 5 hrs. later 49; 11 hrs. later 53.			
Strangulated Gut	46 per cent.			

To find an explanation of this abnormality we must turn to the physiology of the animal and one of the fundamentals that we must keep in mind is that there is no reserve bulk of blood ; all the blood is in circulation. This bulk is ample for ordinary needs, for one part of the body is usually resting while another part is at work. I have been told, although I have never tried to confirm it, that if you chase a tiger after it has had a big meal it will vomit before it runs away, this is to make the blood available for the skeletal muscle; as a converse it is a common experience to feel cold after eating a hot meal because blood previously circulating in the skin has been taken away to the alimentary tract.

Within an individual organ not all parts require blood at the same time, and within a small area the great majority of capillaries may be constricted and either empty of red cells or containing red cells that are mis-shapen through pressure, but as in different parts of this area the lack of oxygen and the concentration of metabolites becomes noticeable then the local capillaries dilate and become more permeable. The wall of a capillary has been described as being of the same thickness as the wall of a soap bubble and water and solutions of salts can pass through it but it is relatively impermeable to proteins. When in a locality there is a general dilatation of capillaries due to the lack of oxygen the condition is known as anoxia.

When we examine a piece of tissue under the microscope we commonly see one or two dilated capillaries and the rest will not be easily visible, but, when the same tissue is congested, we may see 20 or even 40 times the number of dilated capillaries. Krogh estimated that in man if all the capillaries in skeletal muscle were to dilate at the same time these capillaries would require over a gallon of blood to fill them, and this amounts to practically the entire volume of blood in the human body.

Conditions of capillary dilatation associated with oxygen lack can also be produced by injury and Menkin has isolated from inflammatory exudates a substance, that he has called leukotaxine, which has both the power of increasing capillary permeability and of attracting polymorph leucocytes.

This reaction is obviously beneficial in the case of small wounds for it permits a supply of plasma that may contain immune bodies, and provides phagocytes to ingest the invading organism. When, however, a large area is damaged the process may lead to disaster.

In the case of a badly damaged limb, for example, there will be capillary dilatation and increased permeability throughout the damaged area. The dilatation of all these capillaries and their increased permeability leads to a stasis, and even although there may be no loss of red cells, the whole of this blood volume is out of circulation and the effective blood volume is reduced. This change I have described occurs very quickly after injury and it can be shown to exist by tests designed to measure the effective blood volume. It does not, however, affect the haematocrit readings at this stage, but it does start off a vicious circle which does affect the haematocrit readings. This vicious circle has been described by Moon. He describes how this stasis decreases the effective blood volume so that the heart receives less blood ; the heart can only pump as fast as it receives, so that it circulates less blood and thereby circulates less oxygen so that tissues in the undamaged part of the body receive less oxygen and begin to suffer from anoxia. With anoxia there is a dilatation of capillaries in that locality together with increased permeability and any metabolites entering the circulation from this area help to increase capillary permeability elsewhere. Thus anoxia in one part causes an anoxia in another part and the vicious circle is strengthened by a further decrease in the effective blood volume. In addition to the ever-spreading capillary dilatation is the concomitant increase in permeability ; the effect of this is that more and more water is escaping from the blood and the proportion of red cells to plasma is steadily increasing, and the blood is becoming more and more like raspberry jam, so that the heart is embarrassed by the receipt of only a small amount of viscous blood.

This vicious circle is at first reversible, or more correctly, it can be broken. In many cases this is done by adjustments within the animal itself, in more severe cases it requires treatment, and playing an important part in treatment is the transfusion of plasma or a plasma substitute.

Obviously when the circulation contains the full number of red cells but has lost fluid the addition of further red cells is an embarrassment, and the treatment is to supply a fluid containing molecules that are too large to seep through the gelatinous capillary wall. If the injection of this fluid either decreases the proportion of red cells in the haematocrit or helps them to remain at a healthy level the treatment is being successful. If, however, despite injection, the proportion of red cells increases, this shows that fluid is being lost quicker in the capillaries than it can be supplied ; in this case the circle is irreversible and if transfusion is the only treatment death is certain.

We commented at the beginning that there were two possibilities with our first haematocrit reading, that there could be too little plasma or too much, and we have dealt with the first possibility, in which there is too little plasma. When we have too much plasma, suggesting anaemia, and we know this to be due to trauma, then the vicious circle is similar—the effective blood volume is again reduced but the picture is complicated by the loss of red cells. In this case if the haematocrit shows a very low percentage of red cells, the injection of a plasma substitute is still a very useful treatment, but it is less useful than the transfusion of whole blood, for this temporarily makes good the accompanying deficit in red cells.

Finally, where the condition is due to obstruction of the gut, digestive juices and plasma may ooze into the lumen of the gut, so that in addition to giving a transfusion of

plasma it is necessary to withdraw the excess fluid from the gut by means of a duodenal tube.

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General Discussion

Dr. J. T. Edwards drew attention to the lack of knowledge concerning animal blood groups. In the preparation of antiserum against cattle plague in India at one time, enormous injections of virulent blood being given to the serum producers, unsightly abscesses were produced. In an attempt to avoid these, he had followed a suggestion made by Sir Arnold Theiler to inject the virulent blood by transfusion, connecting up the jugular vein of the antiserum producer with a corresponding vein of the virus donor. He found, to his surprise, that the recipients suffered a high mortality. This led him to commence examination of the blood groups of cattle, but the problem was beset with many difficulties which included the high fragility of erythrocytes in the ox. The lack of clear-cut agglutination, obscured by haemolysis, made it very difficult to ascertain what system of blood groupings existed in that animal.

Referring to neo-natal jaundice in the foal, Dr. Edwards said that it appeared to be due to the ingestion of haemolytic antibodies contained in the maternal colostrum, such antibodies being able to traverse the barrier constituted by the alimentary mucosa of the new-born foal, although they had been held back by the placenta. A similar phenomenon had been exploited in immunisation against lamb dysentery, where vaccination of the pregnant ewe led to a high concentration of antibody in the colostrum which was absorbed through the intestinal mucosa of the lamb although the same antibody was unable to pass to the lamb through the placental barrier. In cattle plague he had been able to forestall the resistance given to young cattle by the colostrum, by the direct introduction of virus into the foetus *in utero*.

In the treatment of shock, what was really required was something to restore the blood volume and correct tissue anhydraemia. As a makeshift even solutions of gum acacia had been used, but more recently a method of "despeciating" serum by adding formalin had been introduced. After treatment this serum was free from toxic antibodies and could be used for any species.

Dr. R. R. Coombs, in answer to questions, gave an account of the Rh factor and spoke of the increasing complexity of blood grouping. The Rh factor was dependent on a single gene. In erthroblastosis foetalis it was unusual for the first baby to be affected but this was not the case where an Rh negative mother had been given a blood transfusion from an Rh positive donor, for this injection would produce antibodies in her blood.

[The matter in the remarks made by Mr. Coombs is contained in the following articles:—

Mollison, P. L. "The *Rh* factor of blood." *Nature.* **162.** 515-517. (1948.)

Coombs, R. R. A., *et al.* "Haemolytic disease of newborn foals due to iso-immunisation of pregnancy." *J. Hyg., Camb.* **46.** (No. 4.) 403-418.]

Mr. Dixon quoted from his experience in emphasising the extreme fragility of dogs' blood, which was noticeable even in the transport of blood. In calf scour the anhydraemia was complicated by the loss of chloride and it was important to restore the chloride balance as well as to deal with the fluid loss. He thought that if practitioners would only keep asking for substances that could be used for transfusions, these would soon be produced commercially; one such substance was produced in Russia from the blood obtained from abattoirs, and new substances of a non-protein nature but without the undesirable effects of gum acacia were being investigated.

Mr. Holmes: His colleague, Mr. Knight, had found dried human plasma quite effective in the treatment of shock when injected by the drip method. Dr. Holman said that he disliked the use of the bulldog twitch for controlling animals while manipulations were being carried out, as it made them apprehensive and intractable at subsequent operations. Hypoplasia could not be proved in the horse by the absence of reticulocytes or of punctate basophilic cells, as these were not normal regenerative changes in the horse. Mr. McLoughin felt that with thick-skinned animals a bulldog twitch was necessary.

Mr. W. Smith: He had found the use of blood from an abattoir useful as an alternative to donor cows, but the liaison necessary with the abattoir, the difficulty of sterilising, the difficulty of storage and the fact that three people were required for the operation, made it impracticable in routine practice. He wondered if Mr. Holmes could carry out the process single-handed?

Mr. Holmes replied that he always carried needles, syringes, sterile water and citrate tablets in his car. It did not take more than five minutes to collect 400 ml. and another five to inject them into a cow or calf. Mr. Smith said he had transfused four litres and it had taken a considerable time; he wondered what volume was efficacious for the cow. Mr. Holmes said that he commonly used 800 ml but that a larger volume might be better: 800 ml. took from five to ten minutes to inject into a calf.

Mr. Ingram: He preferred to cut the skin of the donor cow and bleed through a canula into a bottle. When the full bottle was held upside down, gravity made injection easy. He gave 2·5 l. morning and evening. He was certain that these transfusions were of value in post-partum haemorrhage; sterilising the apparatus was not tedious. In calf scour some preferred using the blood of the dam but others relied on a mixed sample from other cows in the herd. Mr. Holmes said that he preferred using the blood of the dam and results were good if treatment was early. Mr. Ingram said that in a herd affected with this disease he had collected blood from a number of cows and stored it, injecting 50 ml. to calves that became infected; this was a useful addition to sulphanilamide treatment.

Dr. Edwards put the question as to whether white scour was due to a variation in the resistance of the calf or to a variation in the virulence of the organism. He quoted recent work by Dr. Joan Taylor, when investigating food outbreaks. She had found that *B. coli* varied in pathogenicity from quite harmless strains to highly virulent ones, but that the only reliable method of detecting virulent strains was to feed them to human volunteers. If, however, white scour was due to a lack of resistance in the calf then one could add to the antibodies already provided by the colostrum by injecting massive doses of whole blood from the dam.

Mr. Barton asked how the jugular vein was raised when the calf was nearly dead. Mr. Holmes replied that it was best to sit on the ground with the neck of the prostrate calf arched over one knee. After clipping the hair the vein was raised by finger pressure and the needle was inserted while attached to a syringe. Failing the jugular vein, the radial vein could be tried. Dr. Edwards spoke of the advantages of the trocar and canula over a needle when taking blood, particularly if the canula was fitted with a tap.

Mr. Barton said that "blood letting" was a common and effective treatment for colic in horses in continental countries. He did not know the reason, but pointed out that in lethal cases of colic both the stomach and intestines were congested. Professor McCunn: "Blood letting" would reduce a high temperature and often leave an animal all right again in half an hour. Mr. Wright: Our ancestors had used remedies without understanding their action; many had proved of value and with the growth of knowledge had been proved reasonable.

A short general discussion on empirical treatments followed.

AN ANTHRAX WARNING

From January 1st to July 31st, 1949, 114 outbreaks of anthrax have been confirmed among animals in this country. Although this total is not as high as in the pre-war years it is about twice as great as in the corresponding periods in 1946, 1947 and 1948, and can be ascribed mainly to the increasing quantities of imported feeding-stuffs and fertilisers which are becoming available.

To the above recent statement the Ministry of Agriculture adds:

"A disturbing feature of the 1949 outbreaks has been the number of occasions where there has been cutting of the carcase. It is estimated that this has occurred in about 20 per cent. of the outbreaks and there is little doubt that, owing to this country's comparative freedom from the disease in recent years, stockowners and others have become less alert to the possibility that anthrax may be the cause of illness or deaths in animals. Veterinary surgeons are asked, therefore, to remind stockowners that in no circumstances should they cut or allow others to cut the carcase of an animal which there is any reason to fear may be affected with, or have died from, anthrax."

SALMONELLA DUBLIN INFECTION OF YOUNG GOATS

By

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Salmonella dublin has been reported mainly as a cause of disease in calves and adult cattle and of cases of food poisoning in man; exceptionally it has been found to infect pigs, sheep, fowls and silver foxes, and it has been isolated from wild rats. The object of this note is to record an outbreak in young goats.

Losses occurred during May, 1948, among 18 goats one to eight weeks old. They had been purchased from different breeders mostly when three days old. They were artificially reared in this Institute on heated cow's milk and milk substitutes—a diet which in previous years had proved satisfactory.

The disease was characterised by fever, dullness, loss of appetite and diarrhoea. The faeces became soft, yellowish in colour and foul-smelling. All the 18 animals were affected but the symptoms shown varied greatly in severity. Ten animals died and eight recovered. Treatment with sulphamezathine and phthalyl sulphathiazole was attempted towards the end of the outbreak but it was not possible to assess their value because of the small number of animals treated and the fact that spontaneous recovery occurred. *Post-mortem* examination of the fatal acute cases showed petechial haemorrhages of the serous membranes with some exudate in the cavities. There was a diffuse inflammation of the abomasum and small intestine. The mesenteric lymphatic nodes were swollen in some cases. The spleen was enlarged and hyperaemic, the liver and lungs were congested, the gall-bladder was thickened, oedematous, congested and distended with bile. In the less acute cases multiple greyish or yellowish miliary nodules were present in the liver.

An organism belonging to the genus Salmonella was isolated from the faeces, intestines, liver, gall-bladder, spleen, heart blood and bone-marrow. It was a Gram-negative motile bacterium which grew well at 37° C. on ordinary media. It failed to produce indole in peptone water or to liquefy gelatine. Acid and gas were produced from dextrose, maltose and mannitol, whilst lactose, sucrose and salicin were not attacked. Litmus milk was first turned slightly acid and then alkaline within three to five days. Twelve mice proved highly susceptible to the oral administration of a small dose of culture. Within five to 12 days they developed a fatal mouse typhoid syndrome. The disease spread by contact to twelve control mice all of which died within four weeks. Dr. Joan Taylor, of the Salmonella Reference Laboratory, found that the antigenic structure of the organism corresponded to *S. dublin*.

O = IX, XII

H = g, p.

After recovery none of the eight survivor goats proved to be shedding the organism, judging by repeated examination of faecal samples either directly on MacConkey and desoxycholate citrate agar or indirectly after a preliminary enrichment in tetrathionate or selenite broth. At *post-mortem* examination of these animals which took place one, one, two, two, six, six, seven, eight months respectively after recovery, attempts to recover *S. dublin* from different organs (gall-bladder, liver, spleen, bone-marrow, mesenteric lymph nodes, intestines and faeces) were unsuccessful.

SERUM AGGLUTININS OF RECOVERED ANIMALS

These were studied using "H" and "O" suspensions of the homologous strain. "H" suspensions were made up of seven hours' growth at 37° C. in broth formolinised to a final dilution of 0.1 per cent. The "O" suspensions were prepared from overnight cultures on agar; these were washed in saline, mixed with 20 volumes of absolute ethyl alcohol, heated to 45° C. for 30 minutes and the deposit finally suspended in a small volume of saline and preserved at about 4° C. with a few drops of chloroform.

The goats were kept for about one to eight months after the outbreak and during the interval they were bled three to 18 times. One ml. dilutions of the sera in saline, starting at 1 : 10, were mixed in one series with 1 ml. of "H" suspension and in another series with 1 ml. of "O" suspension, both suspensions standardised before use to the opacity of tube one of Brown's scale. The "H" and "O" mixtures were incubated for two and four hours respectively in a water bath at 50° C. to 53° C. following which the tubes were left on the bench for 18 hours before being read. The results of these periodical tests are given in Table I (*over-leaf*) (goats Nos. 8, 9, 11, 12, 17, 18, 19 and 20).

For comparison sera from 40 healthy goats were obtained from two herds in Berkshire in which no history of similar disease had been diagnosed for the last five years. The critical titre varied slightly but generally it was found that young goats less than one year old showed "H" titres below 1/40 and "O" titres below 1/20 whilst older goats reacted in some cases up to "H" 1/80, "O" 1/40. The faeces from ten normal goats that reacted most to the test were examined for the presence of Salmonellae with negative results.

EXPERIMENTAL *S. dublin* INFECTION IN GOATS

On 2.6.48, when the outbreak was subsiding, two healthy twin goats one week old (Nos. 21 and 22) were placed in a pen 4 × 2 yds. in size, which had been used by some of the infected animals. A third goat (No. 23) three days old, was added on 22.6.48. These three animals remained in good health, but one of them (No. 22) showed increased agglutinins at the second bleeding within 12 days of arrival. The "H" titre rose progressively to 1 : 10240 at 26 days, subsiding to 1 : 640 at the 60th day (see Table I). The "O" agglutinins did not rise above 1 : 80 and disappeared by the 30th day. On 28.8.48, goats 22 and 23, then about three and two months old respectively, were fed on each of two successive days a dose of *S. dublin* suspension representing half a 20-hour growth on an agar slope. The first dose was pipetted on to the back of the tongue whilst the second dose was given in 50 cc. of milk through a nursing bottle. The third goat (No. 21) was left untreated.

Symptoms appeared in both inoculated animals within 36 to 48 hours and consisted of hyperthermia (rising to 106.4° F. and 107.8° F., respectively, dullness, inappetence, and an acute diarrhoea with soft, putty-like, yellowish foul-smelling faeces. The symptoms ceased in five to six days in goat 22. In goat 23 they were more severe and persisted for a fortnight, after which a slow recovery took place. In the third animal (No. 21) which had been left in close contact

TABLE I

AGGLUTINATION TITRES OF INFECTED YOUNG GOATS TO HOMOLOGOUS *S. dublin*

Goat number		8		9		11		12		17	18	19	20		21		22		23	
Dates:	7.6.48	640	*160*	1,280	—	2,560	*40*	2,560	*320*	320	— 20,480	— 640	— 640	*160*	—	—	—	—	·	·
	4.6	2,560	*640*	1,280	—	2,560	*20*	2,560	*160*	320	— 20,480	— 640	— 640	*40*	—	—	640	*80*	·	·
	22.6	2,560	*320*	1,280	—	1,280	—	2,560	*160*	320	— 640	— 640	— 160	*20*	—	—	2,560	*80*	·	·
	28.6	5,120	*80*	5,120	—	1,280	—	640	*40*	320	— 2,560	—	80		—	—	10,240	*20*	—	—
	12.7	5,120	*20*	1,280	*20*	640	*20*	2,560	*40*		5,120	*40*	640		—	—	5,120	—	—	—
	4.8	5,120	*20*	1,280	—	160	—	2,560	*40*		5,120	—			—	—	640	—	—	—
	20.8	2,560	—	1,280	—	·	·	5,120	*40*						—	—	·	·	—	—
	26.8	·	·	·	·	160	—	5,120	*40*						20	—	640	—	—	—
	31.8	·	·	·	·	·	·	·	·						20	—	1,280	—	—	—
	2.9	1,280	*20*	5,120	—	160	—	5,120	*20*						20	—	1,280	*10*	20	*40*
	5.9	·	·	·	·	·	·	·	·						40	*20*	2,560	*640*	10,240	*640*
	8.9	·	·	·	·	·	·	·	·						80	*160*	40,960	*320*	81,920	*10,240*
	17.9	5,120	*20*	640	*10*	160	*10*	5,120	*20*						40,960	*5,120*	5,120	*160*	20,480	*5,120*
	4.10	5,120	—	640	—	160	—	5,120	*20*						640	*80*	5,120	*40*	40,960	*1,280*
	16.10	5,120	*20*	640	—	80	—	5,120	*20*						640	*80*	10,240	*80*	20,480	*2,560*
	3.11	1,280	*20*	640	—	80	*10*	2,560	*20*						320	*20*	640	*40*	10,240	*1,280*
	26.11	640	*10*	320	—	80	—	2,560	—						320	—	1,280	*20*	10,240	*1,280*
	31.12			640	—			1,280	—						320	*10*	640	*20*	10,240	*640*
	21.1.49			640	—			1,280	*10*								2,560	—	5,120	*160*

Legend: H titres in ordinary numerals O titres in italic numerals — No agglutination at 1/10 · Test not done

with the other two, a mild attack of the disease was observed five days after the beginning of the experiment.

The excretion of *S. dublin* in the faeces is shown in Table II. The organism was recovered within 36 to 48

TABLE II

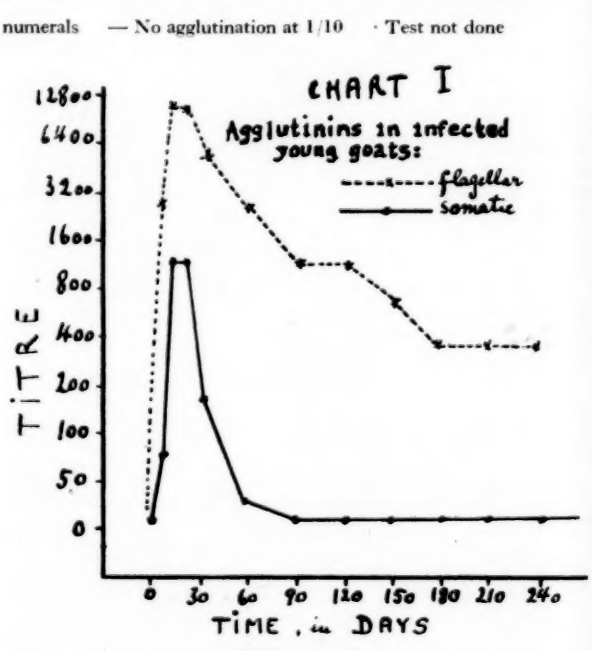
EXCRETION OF *S. dublin* IN THE FAECES OF EXPERIMENTAL GOATS

Goat number	Days after beginning of experiment									
	2	4	5	7	9	12	15	28	44	124
22	+	+	+	+		+	+	—	—	—
23	+	+	+	+	+	+	+	+	—	—
21 in-contact control	—	—	—	+	+	+	—	—	—	—

Legend: + or — = Recovery or non-recovery of *S. dublin* by direct and enrichment methods.

hours after experimental infection. Its excretion was of relatively short duration (about one to two weeks) in goats 21 and 22. In goat 23, which had shown a severe reaction, it was still detected 28 days, but not 44 days, after infection. On *post-mortem* examination, carried out approximately five months after infection, none of the three animals proved to be a carrier judging by the negative cultures (with or without preliminary enrichment) obtained from the gall-bladder, spleen, bone-marrow, kidneys, mesenteric nodes, intestines and faeces.

"H" and "O" agglutinins appeared in the serum within five to eight days of infection. They rose quickly to a maximum between the 10th and 16th day and then fell—the somatic agglutinins very quickly, and the flagellar agglutinins very slowly. Chart I shows the general trend of their rise and fall. These were similar in the three goats, but the "O" titre remained at a high level for longer in goat 23 which had a more severe infection (see Table I).



Discussion

S. dublin infection of young goats could be confused clinically with coccidiosis, strongylosis and diarrhoea from other causes, all of which conditions are commonly observed in this species. Diagnosis can be established by the isolation of the organism from the faeces or from the internal organs. Desoxycholate-citrate agar of Leifson (1935) modified by Taylor (1947) sown directly or after enrichment in selenite broth (Leifson, 1936) proved, as in other hands, very helpful for this purpose when dealing with faeces or intestinal contents.

The disease of young goats closely resembled *S. dublin* infection of calves (Field, 1948) in symptoms, lesions, bacteriological findings and also in the infrequency of carriers after recovery which occurs spontaneously in some cases. Field has been able to demonstrate "H" but not "O" agglutinins in the infected young calves. In contrast

some young goats developed "O" as well as "H" agglutinins (see Table I), the former disappearing within a few weeks. In goats 9, 17, 18 and 19 the failure to demonstrate "O" agglutinins may have been due to the transient character of the latter or to some idiosyncrasy. For retrospective diagnosis of *S. dublin* infection or for epizootiological studies the "H" agglutination may be the only one detectable.

The origin of this outbreak in young goats has not been traced. The milk and milk substitutes were fed to the animals after a preliminary heating. Two rats caught round the pens were not found to carry Salmonellae. It is possible that *S. dublin* was introduced by one or more of the goats and subsequently the hazards of artificial rearing by weakening the host's resistance had favoured the onset of the disease in a clinical form and its spread. Young goats (Nos. 22 and 23) were found to be fairly susceptible to experimental infection and goat 21 which was in close contact with them also became infected. The great similarity of the disease in young goats to that of calves suggests the possibility that adult goats may carry or suffer from *S. dublin*, as do adult cattle, and that such goats could in the same way be a danger to other animals or man.

Summary

A disease of young goats associated with *S. dublin* is described. It resembled the well-known condition in calves. Data were obtained on the excretion of the organism in the faeces of goats, and the fluctuations of their blood agglutinins following natural and experimental infection.

Acknowledgments

I wish to thank Dr. Joan Taylor, of the Salmonella Reference Laboratory, for the serological typing of the goat strain.

References

Field, H. I. (1948.) *Vet. J.* **104.** (8). 251.
Leifson, E. (1935.) *J. Path. Bact.* **40.** 581.
——. (1936.) *Amer. J. Hyg.* **24.** 423.
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NATIONAL POULTRY SHOW

The National Poultry Show to be held at Olympia, London, on December 8th, 9th and 10th next, has been licensed by the Ministry of Agriculture. Conditions attached to the licence are that Selling Classes will not be permitted and that no poultry that have been kept on the premises of a domestic poultry-keeper shall be allowed to be exhibited. A domestic poultry-keeper is defined by the Ministry of Agriculture as "a person who keeps on ground attached or adjacent to his residence a few birds for show purposes or for the production of eggs for his or his neighbours' households." It is possible that changes may occur in the weeks that remain before entries close. The schedule, now being prepared for issue, will, therefore, include the full classification planned by the Management Committee before the new regulations become operative. Entries will be invited from all classes of exhibitors and a final decision will be taken on the actual closing date.

From its inception the Committee of the National Show has been mindful of the normal disease risks attached to the grouping together of stock from a variety of sources. Long before fowl pest became prevalent the show was under constant veterinary supervision and every exhibit has had to pass a stringent veterinary examination.

For the 1948 Show a further clause was added and no entries were accepted from small exhibitors who were not members of organised clubs or associations.

CLINICAL COMMUNICATION

INVERSION OF THE BLADDER IN THE MARE

GEO. P. MALE, M.R.C.V.S.
Reading

Subject.—A very valuable Thoroughbred mare, seven years old, with foal at foot about four months old.

History.—She had an easy foaling with no complications and had led a normal life except that she had received a dose of phenothiazine two days previously.

Symptoms.—The mare was found to be straining at intervals and passing urine in small quantities. On examination a pear-shaped pink swelling was found just inside the vagina which when straining took place was protruded between the lips of the vulva. When palpated the ureters could be felt and it was obvious that the bladder had become invaginated through the urethra.

Treatment.—An epidural anaesthetic was given, the vagina was swabbed with a mild antiseptic and the bladder massaged with an emollient-ointment as the walls had become thickened and congested. At the same time it was compressed to reduce its volume. Attempts were made to invert the organ but this caused severe straining and was much resented by the mare in spite of the anaesthetic and a dose of sedative. It was decided to bring the mare into hospital and give a general anaesthetic after casting. The bladder was found to be congested and red, especially at the fundus, and it was obvious that it would need compression and massage before it could possibly be returned through the urethra which appeared to be unusually small. This took about 30 minutes and efforts were made to involute the bladder, a procedure which, owing to the mucous membrane being somewhat friable, needed great care. As no progress was made the wooden nozzle of a large enema pump, about 12 inches long, which had been covered at one end with cotton wool, was brought into use and, with two hands compressing the bladder and the instrument manipulated against the chest of the operator, the bladder was gradually returned but it required considerable pressure to squeeze it through the urethra. A solution of weak chinosol was injected into the bladder and the instrument was allowed to remain for some time to prevent a recurrence.

Injections of penicillin were given and bladder sedatives administered.

The mare strained slightly at intervals, especially after micturition, but has made a good recovery to date, the temperature remaining normal throughout. Very slight haemorrhage was reported on the seventh day.

Discussion

My reasons for reporting this case are:

As far as I am aware, no case has been recorded in the mare except as a complication of parturition.

The cause of the condition is obscure unless the phenothiazine was responsible.

The impossibility of returning the organ without the help of an instrument.

The good recovery made in spite of prolonged manipulation.

I found it one of the most delicate and difficult operations in my long experience.

NEW INSTRUMENTS AND APPLIANCES

ELECTRICALLY HEATED BLANKETS FOR OPERATING TABLE AND KENNEL USE

By

C. FORMSTON, G. C. KNIGHT AND F. J. MILNE

Surgery Department, Royal Veterinary College

Heat loss is an integral factor of the shock syndrome and is a problem which confronts the surgeon at all operations irrespective of atmospheric temperature and species of patient. In the past, modifications to operating tables have been introduced to conserve body heat during surgical interferences on small animals and it is not unfair to say that none has entirely fulfilled requirements. It is a well-recognised fact that under general anaesthesia the heat control mechanism is involved to such an extent that the body temperature often falls as much as 7° F. below normal and the patient is " cold " to the hand.

During the past nine months, in collaboration with Messrs. Windak Ltd., we have investigated the possibilities of electrically heated blankets as a means of preventing excessive heat loss during operations and in post-operative recovery. Prior to this we had incorporated a similar type of blanket in an ordinary cattle rug for use in convalescing bovines and those suffering from pulmonary disorders.

The experience gained up to the present shows clearly that the electric blanket is much more effective in providing artificial heat to small animals under general anaesthesia than anything previously tried, *e.g.*, hot water bottles, blankets and tables heated by hot water circulation.

We find that when the electric blanket is used on the operating table the fall in body temperature is less than when it is not used. Similarly, post-operative recovery is hastened when the electric blanket covers the floor of the kennel. When the barbiturate anaesthetics are employed the detoxication time is appreciably reduced.

Of the various types of blanket produced for trial, the one found most suitable for both table and kennel use consisted of a heating element resembling, in its basic form, a 1½" gauze " bandage " woven from stainless steel and embedded in a fire-resistant insulating plastic. The heating element is threaded through slots woven into the cloth which forms the blanket. The cloth is coated with a similar plastic to that used on the element and is impervious to all liquids. Should it become soiled, it can be easily washed down or treated with any disinfectant.

A Transformer with built-in " finger control " switch provides a variation of voltages of 24, 17 and 12.

It is economical in use.

Acknowledgment.—We wish to thank Mr. A. Dudley, of Messrs. Windak Ltd., for his willing co-operation in the production and supply of materials for the purpose of these trials.

Weekly Wisdom

Nobody can be argued into laughter. Some people find Jane Austen tedious, while splitting their sides over American comic strips which bore Miss Austen's admirers to tears.—Miss Dorothy Sayers (lecturing at the summer school of Italian at Magdalen on " The comedy of the Comedy.")

surgery is one which the surgeon who prides himself on modern ideas cannot afford to be without in this era of rapid progress in the surgical field.

REVIEW

[**Canine Surgery.** By 24 North American Authors. Published by *The North American Veterinarian*, Box 872, Evanston, Illinois. Pp. 564+xvi. Illustrations 345. Price $12.50 on all foreign orders.]

This work is devoted to surgical diseases of the dog, and comprises a symposium contributed by some 24 American authors.

It is without doubt the most up-to-date work of this class in the English language and includes in its very comprehensive scope sections on such modern surgical developments as intra-tracheal narcosis and the most recent advances in bone surgery including intra-medullary pinning.

The book opens with an extremely useful section on surgical anatomy of the dog ; this should certainly be a feature of all surgical textbooks and its importance can scarcely be over-estimated. This is followed by another section vital to a proper approach to surgery, *viz.*, physiology, but it seems this chapter might have been worthy of expansion beyond the present scope which is confined to a consideration of the blood. Healing and repair is considered in the next chapter, followed by a section on suturing which, it is felt, might well have included a consideration of types of suture material, their uses, advantages and disadvantages.

The chapter on general anaesthesia includes an adequate description of methods of intra-tracheal narcosis, giving details of the very simple apparatus in use at the Mayo Clinic as well as those of more complicated equipment for this purpose.

Surgical conditions and operative techniques for their correction are dealt with on a regional basis.

Owing to the multiplicity of authors there is occasional overlapping in some sections, with some divergence of opinion expressed on diagnosis, techniques, etc. This is no disadvantage and makes for a more stimulating and thoughtful reading.

The section on perineal hernia is deserving of special mention as it provides a detailed, careful and well thought out exposition of this rather difficult condition.

The section dealing with fractures includes details of modern techniques utilising the Stader splint, vitallium plates and intra-medullary pinning—methods which, as has been seen at the recent Congress, are now routine practice in the U.S.A.

The book concludes with a consideration of some cosmetic techniques, some of which are not regarded as ethical in this country, but which are none the less worthy of mention.

From the point of view of the practising veterinary surgeon this book should prove invaluable, but since many of the surgical techniques described assume a sound basic knowledge of the method to be employed, some of these are deficient in detail and would need to be read by students in a discriminating manner. The inclusion of much information on anatomical, physiological and normal healing processes in several sections is, however, of the greatest service to the latter class of reader.

The book is beautifully produced and copiously illustrated with both photographs and diagrams ; a minor criticism is that it has not always been found possible to relate the illustrations to the appropriate text in the make-up.

In conclusion it must be said that this most comprehensive and up-to-the-minute work on the subject of canine

ABSTRACTS

[Investigations on Serum Phosphatase in Dairy Cows during Hypomagnesaemia. HALSE, K. (1948.) *Skand. VetTidskr.* 1948. Pp. 567-579.]

The author has examined the activity of the serum phosphatase level in cows showing hypomagnesaemia resulting from diets containing cellulose, herring meal, hay, straw, roots and silage. The examinations were made over a period, June, 1946 to November, 1947, on the cows in the experimental herd of the Norwegian Veterinary College. These rations, commonly used in Norwegian herds during the war, were deficient in magnesium and caused hypomagnesaemia which could be prevented by the addition of $MgCO_3$ (28 mg. per day) although the serum magnesium levels remained slightly depressed.

The activity of alkaline phosphomonesterase was determined by Bodansky's method and the results expressed as Bodansky Units (B.U.). Phosphorus was estimated by the method of Fiske and Subbarrow. Magnesium was estimated in the serum, following the precipitation of calcium as oxalate, the calculations being based on extinction curves recorded for standard solutions of $MgCO_3$ (0.3-2.5 mg. per cent. Mg) which were analysed simultaneously with the serum.

In cows with hypomagnesaemia statistical analysis showed a positive correlation between the serum magnesium and phosphatase. In cows showing symptoms of tetany and paresis and where blood analysis showed hypocalcaemia and hypomagnesaemia the serum phosphatase activity was invariably low (0.55-2.5 B.U.). Individual cows show their own peculiar level of phosphatase activity and variations between cows may be from 1.85 B.U. to 5.35 B.U.

The addition of magnesium as a supplement to the diet of cows showing hypomagnesaemia caused a marked increase in the serum magnesium level but had little influence on the activity of serum phosphatase. The low phosphatase values, therefore, did not appear to be caused by a magnesium deficiency. Since the magnesium supplemented diet did not produce complete restoration of the blood serum magnesium values the author suggests that the deficient diet has some factor other than magnesium which is capable of influencing both serum magnesium and phosphatase simultaneously.

F. R. B.

* * * *

[The *Brucella abortus* Ring Test. BRUHN, P. A. (1948.) *Amer. J. vet. Res.* **9.** 360.]

The ring test is performed by adding one drop of haematoxylin-stained Brucella antigen to 1 cc. of milk. After incubation at 37° C. for one hour the milk and cream will be found to have taken on certain hues which vary according to the degree to which the milk is positive; in a strongly positive case the cream is bluish-violet, and appears clearly separated from the white column of milk below. In a weakly positive one the cream takes up less colour and the milk is not visibly decolourised.

The author claims to have made this test more sensitive by washing stained antigen with acidulated water (7 cc. of 1-N hydrochloric acid in 1,000 cc. tap water) instead of ordinary tap water.

Tests show that the ring test is very much more sensitive than the milk agglutination test. In serial dilutions, made with milk from a strongly positive cow, the whey agglutination titre disappears rapidly, yet the same milk diluted several more times will still give a positive ring test.

Studies of the relation between milk and blood titres are recorded, which show considerable variation according to the time at which the animals calved. In 651 cows divided into groups according to the time that they had calved, the blood titre, which averaged 1/100 up to three months after calving, rose to a maximum of 1/821 12 months later, but fell to 1/108 during the next 12 months if re-infection did not re-occur. A similar, though not parallel, rise and fall was revealed in the whey titres. In a comparison of the blood and ring tests over a similar period, it was shown that if the titre in the former fell as low as 1/10 the ring test was still strongly positive.

Rather than being a handicap, this greater sensitivity was shown to be beneficial, it being found by observation over a considerable period that those animals which would pass (with the accepted critical titre as it is at 1.20) nearly always became true reactors subsequently. By means of this test, therefore, herds may be more rapidly cleared of infection than by the existing standard blood test.

N. S. B.

"TEDDY" SHAVE

An Appreciation

So passes away, at the venerable age of 93, a figure in the person of "Teddy" Shave the evocation of whose memory will now touch the heartstrings of untold numbers of men who passed through the London College at the time when there were moving within its precincts such men as "the Dean" (as we all called the great Principal, Sir John MacFadyean), "Jimmy" Macqueen, "Teddy" Shave, Buckmaster and Lander.

Of late years the material inadequacies of the building in which they laboured have been removed, following its official castigation, as it formerly was, as a "national disgrace." But to those men and to their students, it was a "College" in the proper meaning of the word, like the "Colleges" of the older Universities, in which a kind of "life" was lived, orderly and well regulated. The students within looked up to their teachers not only as purveyors of knowledge but as guides in the ordering of their own lives. So well was that brought about that the graduates of that period from the London school wherever and whenever they met afterwards felt that there was something in common among them that was not to be found in those who had come from the other schools. Even those who had not started their studies at the School never quite caught that something which was caught in the early two years in which the spirit of "Teddy" Shave was so powerfully communicated to the students.

What was that spirit? It was certainly not one of profound scholarship, although there was nothing slovenly or slip-shod about his methods of teaching. For their careers as practising veterinary surgeons, the students all derived a training that was adequate, sound and practical. That spirit was one in which more clearly than through the information he imparted the essential humanity of the man himself communicated itself to his students. No one at this moment on recalling the man can fail to have before him immediately a clear image of a distinct personality. He was, of course, a representative of the late Victorian and Edwardian era—an era which to us who so well recall it—and miss it—had a grace and charm of its own. It may be that its conven-

tions of respectability and formality were pressed farther than we would now consider necessary or even tolerable. "Teddy" was not enslaved to those irksome extremes, and perhaps to us students that was his most remarkable quality, which so much endeared him to us. At once, all old students of his will recall many stories, some of which had a quaintly though not pungently Rabelaisian flavour. Not a few students, in those days of high spirits among them, when most dwelt within easy walking distance of the College, will remember how he could be relied upon to help them out of escapades—even such as called for brief accommodation in the form of bail!

The well-dressed figure of the man, in frock coat and top hat, whose walk was never hurried and never slouched, who was punctual, but not over-punctual, at all his lectures again will be brought to mind. But above all, it was his voice—his monotonic, rather strongly nasal intonation—and his philosophy, that still haunt memory. That voice was never raised in anger or dropped in despair. The philosophy might almost be said to be the absence of one, at any rate of a strongly positive one, for in those days when great preaching was in vogue he never preached to us. The thought of "Teddy," or of "Jimmy," for that matter, being put up to preach would be almost as surely laughed at as it was felt that with "the Dean" it was just possible, and as it was known to be with such as Woodruff a favourite hobby. "Teddy's" precepts were simple and "homely," very funny indeed sometimes because of their sheer homeliness; never "caustic" like "Jimmy's"; and never "scaring" like "the Dean's." Common to this small array of outstanding men who impressed themselves so forcibly upon so many generations of veterinary students at the old London College was one characteristic which they had—in different degree, however—and that was "dignity." While a sense of that dignity was tempered with great respect rather than deep affection in the case of "the Dean" and "Jimmy" Macqueen, with real affection rather than so much respect in the case of "Teddy," and with both affection and respect in the case of a man like Buckmaster (who was an aristocrat)—and the same applied to a very large degree to Lander—no student ever dared to behave unseemingly with his teachers or let it cross his mind to take a freedom with them.

It may be that still among the students there is something that has lingered from that older tradition, even though the array of teachers is infinitely larger and much greater stress is now being laid than formerly upon their purely scientific achievements. We have good reason, from witnessing the bearing of students, to believe that it has. In this they maintain an honoured tradition, for, as William Youatt, as far back as 1828 (in *The Veterinarian*, **1**, 176) stressed in advocating reform of the then existing unsatisfactory education at the College : ". . . *The veterinary surgeon, we have said, is by profession a gentleman. It will be his own fault if he is not received as such by those with whom he associates. The cause of such men cannot be benefited by dishonourable means . . .*"

"Teddy" was to us plainly all that : and he was an outstanding example of how that could be achieved not only without posing as it, but by the process of outwardly disguising it and inwardly cultivating it.

J. T. E.

. . . . . .

The Funeral

The funeral took place on the afternoon of Thursday, August 25th, when a service at the home, conducted by the Rev. W. Arthur Briggs, was followed by the interment at Bexhill Cemetery.

The family mourners were Mr. J. P. Wadling (brother-in-law), Mrs. Wadling, Miss Margery Keen, Mr. A. W. H. Keen and Mr. V. Keen. The widow was unable to attend owing to ill health.

Others present at the graveside were Mr. A. Whicher, M.R.C.V.S. (representing the President and Council of the Royal College of Veterinary Surgeons), Mrs. Whicher, Professor J. McCunn, M.R.C.V.S., M.R.C.S., L.R.C.P. (representing the Royal Veterinary College, and Professor Share-Jones and Professor Gorton), Professor T. J. Bosworth, M.R.C.V.S., D.V.S.M., Mr. Charles Roberts, M.R.C.V.S., Miss E. Russell, M.R.C.V.S., the Rev. P. J. Boulsover, Sister Ward, Mrs. Tomkins (nurse), and members of the household staff.

Professor Shave's professional colleagues and his many other friends and admirers were requested to send a donation to the Victoria Veterinary Benevolent Fund instead of flowers.

SUPPLEMENTARY VETERINARY REGISTER

Restriction of Practise of Veterinary Surgery by Unqualified Persons

NOTICE IS HEREBY GIVEN that the persons set out below, resident at and working at the addresses given below their names, and being persons without a veterinary qualification registrable on the Register of Veterinary Surgeons, have applied for registration on the Supplementary Veterinary Register.

The conditions for registration on the Supplementary Veterinary Register are that an applicant has attained the age of 28 and satisfies the Council of the Royal College of Veterinary Surgeons :—

(*a*) that he is of good personal character ;

(*b*) that during the ten years immediately preceding the application he has for a period of not less than seven years in the aggregate been engaged in the United Kingdom as his principal means of livelihood in diagnosing diseases of animals and giving medical or surgical treatment to animals :

Provided that the Council may authorise the registration of a person under this section who has been engaged as aforesaid during the said ten years notwithstanding that he has been so engaged for less than seven years in the aggregate if the Council are satisfied that the time during which he was so engaged was reduced by reason of his serving in His Majesty's forces or being engaged in work of national importance and that his registration would not be prejudical to the public interest.

Any person having any OBJECTION to the registration of any applicant or desiring to lay any information before the Council thereon should communicate with the undersigned at the Royal College of Veterinary Surgeons, 9/10, Red Lion Square, London, W.C.1, not later than 30 days after the publication of this notice, provided that an extension of the period for objection may be allowed if good cause be shown for such extension.

W. G. R. Oates,
Registrar.

Veterinary Surgeons Acts, 1881–1948.

The Fifth List of Names of Persons who have Applied for Registration

Number	*Name and Address*	*Place of Practice*
S.V.R.395	Almond (Miss), M. E., 94, Bristol Street, Birmingham, 5.	Same address.
267	Anthony, Mrs. N. J., 23, Hall Hall Street, Bilston, Staffs.	P.D.S.A., 23, Hall Street, Bilston, Staffs.
312	Atkins, Charles, Regene, 84, Avondale Avenue, Staines, Middlesex.	Same address.
385	Axworthy, R. H., "Broad Oak," 7, Courtenay Drive, Emmer Green, Reading.	The Standard Laboratory, 45, Castel St., Reading.
375	Bain, A. J., 59, Caterham Ave., Barkingside, Essex.	P.D.S.A. Sanatorium, Ilford, and P.D.S.A., Walthamstow.
274	Banner, J. F. H., 12, Kensington Gdns., Ferryhill, Co. Durham.	Same address.
369	Barry, John, Waverley Villa, View Lane, Stanley, Co. Durham.	Stanley Stadium, Stanley, Co. Durham.
336	Bartlett, C. J. M., Westbury, Derby Road, Wirksworth, Derbyshire.	Same address.
345	Beal, E. J., 114, Elgin Road, Seven Kings, Essex.	1, Church Road, Manor Park, E.12.
347	Bills, A. R., 8a, St. James Parade, Muswell Hill, N.10	Same address ; and 6, High Street, Penge, S.E.20.

Number	Name and Address	Place of Practice
207	BISHOP, Mrs. A. T., 19, Central Road, Worcester Park, Surrey.	Same address.
208	BISHOP, P. R., 19, Central Road, Worcester Park, Surrey.	Same address.
387	BLACKLER, P. M. B., 3, East Row, New Wanstead, E.11.	Surgery, Woodbine Place, Wanstead, E.11
402	BLOOM, J. W., 55, Cresswell Rd., E. Twickenham, Mdx.	P.D.S.A. Animal Hospital Sh. Sikket el Bedai, Abbassia, Egypt.
339	BLOOM, P. J., 155, Farm Rd., Edgware, Middlesex.	P.D.S.A., London Area Dispensaries.
367	BOLTON, H., Meeches Farm, Fritham, Lindhurst, Hants	P.D.S.A., 14, Clifford Street, London, W.1.
350	BOWKER (Miss), Beryl, 40. Woodland Gdns., Muswell Hill, London, N.10.	P.D.S.A., 78, Junction Road, Upper Holloway, London, N.19.
304	BREEN, Reginald C., 353, Grange Road, Upper Norwood, S.E.19.	121, Cherry Orchard Road, East Croydon, Surrey.
380	BROCKLEHURST, N., 145, Salt Street, Shaw, Oldham.	11, Osborne St., Shaw, Oldham.
386	BROWN, James Cox, 104, Harehills Ave., Leeds, 8.	70, Roundhay Road, Leeds, 7.
378	BROWN, L. C. G., 36, Barons Court Road, W.14.	15, Douglas Road, Hounslow, Middlesex.
69	BURROUGHS, Henry, Parkview, Blaenavon, Montgomeryshire.	Same address.
61	BUTCHER, T. C. R., Pool House, Cleehill, Ludlow.	Same address.
315	CAMP, H. G., 65, Baker Street, Enfield, Middx.	135, Baker St., Enfield, Middlesex.
397	CHADWICK, P. R. C., 22, Holly Park, Finchley, N.3.	The Animal Hospital, 115, Spanish Town Road, Kingston, Jamaica, B.W.I.
254	CHANNING, G. F., 17, Portland Street, Ilfracombe, Devon.	Same address.
352	CHESTER, F. S. J., 165, Alexandra Park Road, Wood Green, N.22.	P.D.S.A., 59, High St., Edgware, Middlesex.
401	CHITTY, H. E., Hermon House, 72, Hermon Hill, Wanstead, E.11.	P.D.S.A. Hospital, Stuckeris St., Cape Town, South Africa.
403	COATES, I. H., 49, Cambridge Road, Cosby, near Leicester.	Same address.
340	COOK, H. T., 316a, Westborough Road, Westcliffe-on-Sea, Essex.	8, Portland Road, Hove, 3, Sussex.
388	COVENEY, F., Frandol, Headcorn, Kent.	Same address.
356	DANIELLI, H. W., 8, Caledonia Place, Bristol, 8.	Same address.
318	DAPLYN, R. F., 7, Young's Buildings, Old Street, London, E.C.1.	Messrs. Whitbread's Stables, Garret St., Golden Ln., London, E.C.1.
366	DAWSON, W. T., 105, Leigham Court Drive, Leigh-on-Sea, Essex.	P.D.S.A., Baltic Ave., York Rd., Southend-on-Sea.
78	DIER, B. S., Oak Croft, Mayfield, Sussex.	Same address.
205	DOWLING, J. J. W., 41, Maidstone Avenue, Romford, Essex.	Same address.
368	DRURY, Arthur W., Caulton's Farm, Postland, Crowland, Peterborough.	Same address.
355	D'WIT, Vivian Burton, "Cornerways," Melrose Rd., West Mersea, Essex.	P.D.S.A., Dispensary, 45a, The Mall, Ealing, W.5.
373	ESCOTT, H. J., 49, Rowlands Avenue, Waterlooville, Hants.	Same address.
338	FITZPATRICK, J. A., 94, Blackfen Road, Sidcup, Kent.	Same address.
353	FOSSEY, D., 174, Bennetts Castle Lane, Dagenham, Essex.	P.D.S.A., 31/2, Cork Street, London, W.1.
358	FOULKES, I. H., Bathafarn Farm, Ruthin, N. Wales	288, High St., Croydon, Surrey; and 66a,, Lower Rd., S.E.16.
400	GAUNT, C. H., 15, Featherstone Rd., King's Heath, Birmingham.	P.D.S.A. Dispensary, 39, Twickenham Ave., Auckland Pk., Johannesburg, S.A.
337	GREATOREX, C. J., 1, Ferdinand Place, Chalk Farm, N.W.1.	3, Ferdinand Place, Chalk Farm, N.W.1.
390	HIBBERD, James Brown, Lilybank, Fyvie, Aberdeenshire.	29, Deveron Street, Huntley, Aberdeenshire.
332	HODGSON, D. M., 26, Hall Street, St. Helens, Lancs.	Same address.
398	HORNE, Reginald, 40, Pillsbury Street, Wolstanton, Stoke-on-Trent.	9, bis Rue de la Bucherie, Paris, 5, France.
344	HORNSEY, Henry, 21, Alexander Rd., Swansea, Glam.	P.D.S.A., 26, Alexander Rd., Swansea, Glam.
361	HOY, W. W. G. H., 170, London Road, Wembley.	Same address.
383	HUMPHREY, W. H., 117, Chester Rd., New Oscott, Sutton Coldfield.	Same address.
372	JAQUES, R. P., 226, High Rd., Leytonstone, London, E.11.	31/32, Cork St., W.1.
382	JENKINS, A. W. H., 81, Ashurst Drive, Barkingside, Ilford, Essex.	Essex Mobile Caravan, Dispensary of the P.D.S.A., Woodford Bridge Road, Ilford.
377	JONES, Maurice, 192, Stratford Rd., Birmingham, 11.	R.S.P.C.A., 94, Bristol St., Birmingham, 5.
306	JORDAN, Mrs. M., 14, Kirkland Ave., Barkingside, Ilford, Essex.	P.D.S.A., 1, Church Road, Manor Park, E.12.
371	KEEN, Mrs. B. M., 2, St. Germain's Road, Forest Hill, S.E.23.	Same address.
190	KEEN, F. B., 2, St.Germain's Road, Forest Hill, S.E.23	159, Queen's Road, Peckham, S.E.15.
364	KING, N. T., 4, Ford Hill, Stoke, Plymouth.	P.D.S.A., 135, North Road, Plymouth.
354	LAW, E. R., 113, Kirkdale, Sydenham, S.E.26.	P.D.S.A., 154, St. James Rd., Bermondsey, S.E.1.
342	MACKAY, A. A., Orchard Cottage, Woodcote, Reading.	The Standard Laboratory, 45, Castle St., Reading.
391	MALGARIN, K. R., 91, Harcourt Avenue, Edgware, Middlesex.	Same address.
374	MANN, G. W., "Inxievar," 84, Argyle Road, Saltcoats, Ayrshire.	Same address; and 946, Dockhead St., Saltcoats, Ayrshire.
370	MARSHALL, R., 49, York Rd., Southend-on-Sea.	Same address.
346	MANN, J. H., 12, West St., Wigton, Cumberland.	Same address.
362	MEECH, J. H. L., 71, Port-Road, S. Norwood, S.E.25	Same address; and 7, Watcombe Road, S. Norwood, S.E.25.
384	MELDRUM, Joan, St. Mary's Hospital Kennels, Gronant, Prestatyn, Flintshire.	Same address.
297	MULVILLE, M., 24, Devonport St., Stepney, E.1.	P.D.S.A., 154, St. James Road, Rotherhithe; and 233, Creek Road, Greenwich.
359	MURRAY, D. R., 35, Lammas Park Road, Ealing, W.5.	P.D.S.A., 2a, Holly Rd., Chiswick, W.4.
341	NEWTON, G. H., The Ferns, Bartestree, Hereford.	Not in practice at the moment.
357	PATON, Robert, 6, Clayton Road, Rush Green, Romford, Essex.	P.D.S.A., 174, Bennetts Castle Lane, Dagenham, Essex.
286	PENFORD, F. J., 17, Sidney Road, Beckenham, Kent.	Same address.

Number	*Name and Address*	*Place of Practice*
399	QUARRINGTON, L. J., 337, Court Road, Orpington, Kent.	P.D.S.A. Hospital, Rue San Francisco, 35, Tangier.
313	RICHARDS, J. B., 21, Queen's Town Rd., Southampton.	Ordnance Row, Portsea, Hants.
379	RITTER, F. W., 191, Knowle Rd., Sparkhill, Birmingham, 11.	Same address.
333	ROBERTS, C. H., 12, Ellerker Gdns., Richmond, Surrey.	11, Bute Street, South Kensington, S.W.7.
331	ROBINSON, T. S., 25, Armstrong Ave., North Heaton, Newcastle-on-Tyne.	Same address.
376	RUDDY, H., Bramfield, 23, Sea View, Southwick, Sussex.	P.D.S.A., Hoe Street, Walthamstow, E.17.
393	SAYER, G. H., 61, Victoria Road, Margate.	Same address.
360	SLEE, F. W., Albert House, Station Road, Plympton.	Same address.
151	SMITH, Miss E. V., 71, Portland Road, S. Norwood, S.E.25.	7, Watcombe Rd., S. Norwood, S.E.25.
329	SPIERS, A. W., 3, Montague Place, Brighton, Sussex.	Mobile Caravan, Sussex.
392	STANBRIDGE, L. C., 163, Dyke Road, Brighton.	32a, Upper Russell St., Brighton; and 3, Bridge Street, Newhaven.
244	STURGESS, J. M., 1, St. Mary's St., Northampton.	14, Horsemarket, Northampton.
323	SUMMERS, J. C., Milescott, Allendale, Northumberland.	Same address.
233	TAYLOR, C. W., 25, Leigh Road, Leigh, Lancs.	Same address.
389	THOMPSON, I. K., 3, Pembroke Rd., Ruislip, Mdx.	Same address.
365	THOMPSON, R., The Square, Castlewellan, Co. Down, Northern Ireland.	Same address.
296	TUCKER, S. J., 56, Quentin Road, Blackheath, S.E.13.	20, Mill Rd., Gillingham, Kent.
394	WAINWRIGHT, E. S., 159, Derby Street, Bolton, Lancs.	Same address.
396	WALKER, A. W., King's Brake, Long Compton, Shipton-on-Stour.	Same address.
349	WAREING, R. N., 87, Mavis Road, Northfield, Birmingham, 31.	Same address.
351	WARREN, R., 77, Grove Lane, Camberwell Gn., London, S.E.5.	P.D.S.A., 174, Wandsworth Road, S.W.8.
348	WATKINS, F. M., 36, Dalston Lane, Hackney, E.8.	Same address.
343	WILEMAN, D. R., 182a, Bowes Rd., London, N.11.	Same address; and 12, Wordsworth Parade, Harringay, London, N.8.
308	WILKINSON, C. S., 164, Eccles Old Road, Salford, 6, Lancs.	94, Folds Rd., Bolton, Lancs.
381	WINFIELD, Elizabeth, 11, Mearriott Road, N.4.	49, Tollington Park, N.4.
363	WORTH, T. H., 7, Newton Road, Ipswich.	38, Derby Road, Ipswich.
335	YARDLEY, S. W., 156, Chase Side, Southgate, N.14.	P.D.S.A., Dispensary, 169, York Way, N.7.

The Mond Nickel Company, Ltd., have available a number of publications dealing with cobalt as the cure of pining disease in sheep. In addition, they have two 16 mm. silent films in colour which were produced as a result of a series of experiments in Cornwall and Scotland. They show effects of treatment and methods of administration. Both of these films are available on loan. A small leaflet, "Available Information on Cobalt in Animal Nutrition," dealing with these facilities, may be obtained on application to The Mond Nickel Company, Ltd., Sunderland House, Curzon Street, London, W.1.

NOTES AND NEWS

Diary of Events

Sept. 3rd.—Annual Meeting of the North of Scotland Division, N.V.M.A., at the Laboratories, Mill of Craibstone, 2 p.m.

Sept. 7th.—Meeting of the Southern Counties Division, N.V.M.A., at Salisbury, 6 p.m.

Sept. 9th.—Meeting of the North Wales Division, N.V.M.A., at the Veterinary Field Station, "Leahurst," Neston, Wirrall, 2.30 p.m.

Sept. 14th.—Meeting of the Editorial Committee, N.V.M.A., 3 p.m.; Executive Committee, 1.30 p.m.

Sept. 22nd.—Meeting of the Western Counties Division, N.V.M.A., at Exeter (Rougemont Hotel), 2 p.m.

Sept. 22nd.—Special Meeting of the South-Eastern Division, N.V.M.A., at Maidstone (Royal Star Hotel), 6 p.m.

Sept. 27th.—Summer Meeting of the East Midlands Division, N.V.M.A., at Messrs. Boots Hill Farm, Thurgarton, Notts., 12.30 p.m.

N.V.M.A. Committee and Council Meetings

The following are the arrangements for meetings of Committees and Council of the Association to be held in London in November:—

Tuesday, November 15th:
11 a.m.—Parliamentary and Public Relations Committee.
2 p.m.—Organising Committee.
4.15 p.m.—Home Appointments Committee.

Wednesday, November 16th:
10 a.m.—Veterinary State Medicine Committee.
2 p.m.—General Purposes and Finance Committee.

Thursday, November 17th:
11 a.m.—**Meeting of Council.**

Friday, November 18th:
10.30 a.m.—**Special Meeting of Council.**

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War Damage Repairs at Gordon Square

Owing to war damage repairs at 36, Gordon Square, some disorganisation in the work of the Association's Headquarters will be unavoidable for the next month or so. Members of the Association and subscribers to the *Record* are therefore asked to allow for this should there be any delay in dealing with their communications.

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PERSONAL

Births.—TUTT.—On August 23rd, to Denise (*née* Becquet), the wife of John Berry Tutt, M.R.C.V.S., a son.

QUARMBY.—On July 5th, 1949, at Westwood Maternity Home, Beverley, to Peggie (*née* Kirk) wife of W. B. Quarmby, M.R.C.V.S., a son—Simon John.

. . . . .

Marriages.—ORTON—BREEDEN.—At St. Saviour's Church, Iford, Bournemouth, on July 27th, 1949, Richard Orton, M.R.C.V.S., only son of Mr. and Mrs. Hills-Orton, of Leamington Spa, to Joan, only daughter of Mr. and Mrs. Breeden, of Bournemouth.

WALSBY—SCOTT WHITE.—On August 8th, 1949, at St. Luke's Church, Bath, Somerset, Jack B. Walsby, M.R.C.V.S., only son of Mr. and Mrs. A. Walsby, of Twickenham, Middlesex, to Anne Scott White, M.R.C.V.S., only daughter of Dr. and Mrs. E. Scott White, of Bath.

. . . . .

Forthcoming Marriage.—DALZELL—GRANT.—The engagement is announced between Kevin Dalzell, M.R.C.V.S., son of the late Mr. and Mrs. A. Dalzell, of Crawfords Burn, N. Ireland, and now of Durban, S. Africa, and Margaret, daughter of Mr. and Mrs. P. M. Grant, of Landsdowne, Ixopo, Natal.

* * * * *

PERSONAL

Holiday in Sweden in 1950.—During his visit to the International Congress in London this year, a Swedish veterinary surgeon—Mr. Herbert Dahlgren—enquired whether his two children could visit the home of a veterinary surgeon and his family in Britain during next summer, for three or four weeks, and, in exchange, invited two children of a British veterinary surgeon to visit his family in Sweden. He has a son now aged 14 and a daughter of 16 and

would hope to exchange with children of similar ages. His home is in Ljusdal—about 200 miles north of Stockholm; and he has a summer house by the sea at Borrby in southern Sweden, where his guests would actually stay on a summer visit.

The Swedish school holidays start about June 15th, so if Mr. Dahlgren's children could come to England soon after that time, the English children could perhaps return to Sweden with them, since the majority of English schools break up about the end of July.

Although it is early to start thinking of 1950 summer holidays, it is thought that any British veterinary surgeon interested might like to correspond beforehand with the Dahlgrens and the children might wish to do the same. Both Mr. and Mrs. Dahlgren speak a little English and their children quite a lot.

Would any British veterinary surgeon interested in this exchange kindly get in touch with the General Secretary, N.V.M.A., 36, Gordon Square, London, W.C.1, at an early date.

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Biological Agents for Veterinary Use Exempted from Purchase Tax

On August 22nd there came into operation the Purchase Tax (No. 3) Order, 1949, bringing into force a new list of drugs and medicines which are free of purchase tax. Head IV of the list, which supersedes the existing list shown in the Purchase Tax (No. 5) Order, 1948, extends exemption from tax to the following therapeutic substances intended to be used for veterinary purposes (as well as to such substances intended for human use): "Vaccines, sera, toxins, antitoxins and antigens, prepared for use by injection or by application to the scarified skin, and preparations so prepared consisting only of two or more of those substances."

Other entries in the Schedule to the Order which appear for the first time or under a different head include: Compounds of iron (Head I); Hormones and synthetic compounds with hormone activity, having the carbon ring system of either oestrone or progesterone; Ganglionic or neuromuscular blocking agents and their antidotes containing at least two quarternary ammonium groups terminal to a polymethane chain or chains (Head II); N-(Dialkylaminoalkyl)-phenothiazine, and salts thereof, *pp*1-Diaminodiphenylsulphone, and derivatives thereof, *pp*1-Diaminophenylpyridyl-sulphone, and derivatives thereof, omega-Diethylamino-2:6-dimethylacetanilide, and salts thereof, omega-Diethylaminoethyl-4-amino-1-naphthoate, and salts thereof, 3:3-Diethyl-2:4-diketotetrahydropyridine, Dihydrocodeinone, and salts thereof, Proguanil and salts thereof, Protamines and salts thereof, preparations of stomach containing the haemopoietic principle thereof in a therapeutic concentration and preparations consisting only of any such preparation of stomach as aforesaid and a salt of iron or dried yeast; Anti-microbial substances, or salts thereof, such as are produced by a suitable strain of *Streptomyces aureofaciens*, whether so produced or not (Head III).

Copies of the Order (Statutory Instrument—1949—No. 1529) may be obtained from His Majesty's Stationery Office, price 2d. net.

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THE BRITISH ASSOCIATION MEETING

It is of interest to note that in the same way as Lord Boyd Orr introduced the theme of the XIVth International Veterinary Congress in London by an address on "The World Food Situation," so Sir John Russell is introducing that of the forthcoming meeting of the British Association for the Advancement of Science, at Newcastle, by his presidential address on "World Food and World Population." We are glad to see that a member of our profession in Mr. D. D. Ogilvie, B.Sc. (Edin.), M.R.C.V.S., of Imperial Chemical (Pharmaceuticals), Manchester, has been honoured by an invitation to present a paper to the Association; his contribution, to be given on September 6th, will be entitled "Chemicals and Animal Health." Mr. Ogilvie also was invited to address the scientific conference of the United Nations Organisation which is now being held at Lake Success, U.S.A., but unfortunately was unable to attend.

* * * *

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Foot-and-mouth Disease:

Kent.—Foots Cray and North Cray Farms, Foots Cray, Sidcup (Aug. 24th); Brook Farm, Powers Croft Road, Foots Cray, Sidcup (Aug. 28th).

XIVth INTERNATIONAL VETERINARY CONGRESS

Visits to the Wellcome Veterinary Research Station

On the Tuesday and Wednesday (August 16th and 17th) following the International Veterinary Congress, parties of about 80 members visited the Wellcome Veterinary Research Station as guests of the Wellcome Foundation. Each party travelled by coach and enjoyed the views of the countryside during the 40 mile drive to Frant. They were welcomed on the steps of the mansion house at the Research Station by Dr. R. F. Montgomerie and Mr. S. L. Hignett. The weather was perfect for each visit and the company enjoyed the attractive grounds and gardens—some even venturing into the swimming pool. After an excellent lunch the party divided into three groups, each of which was conducted round the estate and saw various demonstrations which were on view and consisted of:—

Reactions in guinea-pigs produced by injection of various bacterial toxins—Miss M. Ll. Jones and Mrs. I. Batty.

In vitro testing of bacterial toxins and antitoxins—Miss G. H. Warrack.

Immunity in young animals—Miss M. Barr.

Site of production of antitoxin—C. L. Oakley, Miss G. H. Warrack and Mrs. I. Batty.

Examination of bacterial filtrates by partition paper chromatography—H. Proom and A. J. Woiwood.

Clostridium welchii Type B infection in guinea-pigs—A. Thomson and Miss H. Ross.

Encephalitis in dogs with special reference to hard pad disease—D. Trevan and A. B. MacIntyre.

Encephalitis viruses related to louping-ill virus—D. G. ff. Edward.

Pleuropneumonia-like organisms isolated from the bovine genital tract—D. G. ff. Edward.

Studies on bull semen—J. L. Hancock.

Possible relationship between the reproductive efficiency of dairy cows and the calcium-phosphorus ratio of rations they receive—S. L. Hignett and P. G. Hignett.

Fore-limb malformation and retarded growth in Shorthorn calves, probably associated with a genital factor—S. L. Hignett.

Studies on reproduction in the dog—J. L. Hancock and I. W. Rowlands.

Small-animal breeding—I. W. Rowlands.

A parade of Ayrshire cattle—R. F. Montgomerie.

Tea was served in the late afternoon.

On the first day the thanks of the company were expressed by Dr. J. R. Beach, of the U.S.A., and acknowledged by Dr. J. W. Trevan, Director of the Wellcome Research Laboratories; on the second day thanks were expressed by Mr. P. Harnett, of Dublin, response being made by Dr. C. H. Kellaway, Research Director in Chief of the Wellcome Foundation.

The journey by coach back to London completed a very pleasant and interesting day out of town.

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LIVESTOCK EXPANSION IN GREAT BRITAIN

Analysing the returns of the June livestock census, the *Meat Trades Journal* records that compared with a year ago there are in Great Britain 433,000 more cattle, 1,333,000 more sheep, and 760,000 more pigs. The cattle population in England and Wales is 339,000 more than at June, 1948, an increase of 4·6 per cent. The total stands at 7,680,000, which is about a million head above the pre-war figure. There has been an 8 per cent. rise in the number of sheep, 865,000 (of which 139,000 are breeding ewes), but the total of 11,724,000 is some 6,000,000 below 1938. Pigs have risen 488,000 or 29 per cent. in the year and at 2,120,000 are nearly 1¼ million short of the pre-war total. Returns for poultry (60,975,000) show that there are nearly 9,000,000 more fowls in the country than a year ago, 188,000 more ducks and geese and 50,000 more turkeys.

In Scotland, cattle have increased 80,000 (5·3 per cent. on last year), the total of 1,547,000 being 187,000 above 1939. Sheep are up 400,000 (6 per cent.), the aggregate of 7,035,000 is 1,000,000 short of the pre-war number. Pigs increased 50,000 and are now 233,390, which is 19,000 below the figure of ten years ago. Stocks of poultry in Scotland are shown at 10,063,000, fowls are 856,000 above last year, but ducks, geese and turkeys decreased 77,000.

Northern Ireland has 13,642 more cattle, or 1·4 per cent., compared with a year ago. Her total of 979,800 exceeds the figure before the war by 226,660, or 30 per cent. There has been an increase in the sheep population of 70,655 (12·3 per cent.), but the aggregate 645,440 is a quarter of a million below pre-war. The number of pigs, 458,400, is 123,618 more than in June last, an increase of some 37 per cent., but is well below the 1939 figure. Poultry stocks at 24,236,900 are only very slightly up, but are 137 per cent. in advance of ten years ago.

MINISTRY SANCTIONS LIMITED USE OF B.C.G. VACCINE

The Ministry of Health has sanctioned the use on a small scale of the anti-tuberculosis vaccine known as B.C.G. (Bacillus Calmette-Guerin). In a circular to health authorities the Ministry states:—

"It is not yet certain that B.C.G. vaccination gives complete immunity against tuberculosis, and only experience will show how far it is effective under conditions in this country. But there is little doubt that at least it reduces the risk, and there is also some evidence that if a vaccinated person does subsequently contract tuberculosis the vaccination is likely to make it less severe."

The vaccine will be made available primarily for hospital nursing staffs, medical students and those constantly in touch with the infection. A small quantity will be released for chest physicians and other appropriate specialists.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

"GOOD VETERINARIANS" CONTRASTED WITH "COMMON FARRIERS."

Sir,—Mr. Howel V. Hughes, in his letter in last week's *Veterinary Record*, is, I find already, perfectly correct.

The error arose through accepting at fourth hand what could be implied from a reference without consulting the original text, which I believed, wrongly, to be rare and inaccessible.

The fourth-hand reference was a pencilled correction by the late Dr. Bullock in Leclainche's (1936, p. 214) *Histoire de Médecine Vétérinaire*, which then reads: "*Le qualificatif de 'vétérinaire' est utilisé pour la première fois en* 1646 *par Sir Thomas Browne, dans ses* Pseudodoxia epidemica, *alors qu'il contraste les* 'common farriers' *avec* 'good veterinarians.'" Leclainche himself had not used the words "'*contraste*' . . . '*avec*,'" but "'*compare*' . . . '*aux*'"; while Smith (*Hist. Vet. Lit.* **1.** 311), from whom they were borrowed, with his customary great accuracy, had not even "compared" the two classes, but merely said: "In this article Browne writes of 'common farriers' and 'good veterinarians,'" and he was careful too to quote the words in keeping with the context of the original.

I have good reason to believe that Bullock took a lion's share in the preparation of the last-mentioned volume, in devilling for Smith; and so I took it, again wrongly, that he must know what he was doing in entering the pencilled correction.

The year 1658 happens, I find, to be that of the third edition of Browne's "*Pseudodoxia epidemica, or Enquiry into Many . . . Vulgar and Common Errors*"; while, as Mr. Hughes rightly states, the year 1656, so far as can be traced, is when the adjective "veterinary," as distinct from the substantive "veterinarian" was first used in the English language.

Browne seems to have introduced the word more with the meaning it had in the earlier days of Rome, namely that of a "skilful cattle husbandman" than with that in which Vegetius used it much later, about A.D. 500, in his classic, "*Artis veterinariae sive mulomedicinae digestorum libri.*"

However, the passage which Mr. Hughes quotes from my note, containing the words which in substance had become deeply imprinted on my memory from previous research, is quite correct, except in regard to ascription and date.

What the passage conveys cannot be ascribed, I find, to the Scholar-Physician, Sir Thomas Browne, but to a man equally great, and far greater to us in what he did in trying to bring to birth our profession, the Surgeon-Naturalist, John Hunter: that is, if we substitute for "Good Veterinarian" what amounts to the same, "Skilful Veterinarian."

It was much later, namely in 1793, in the famous, "*An Account of the Veterinary College, from its Institution in* 1791. *London*, 1793," which, on the evidence, has been ascribed to Hunter, that the following sentences occur:—"The veterinary science, then, is the art of preserving the health of cattle, and particularly of horses, and of curing their diseases; and comprehends a full and just knowledge of those several animals; of their anatomy, physiology, and pathology; a knowledge of the general laws of the animal economy, and of the particular ones of each distinct species; a knowledge of the animal structure, and its relation to exterior matter, alimentary, medicinal, and noxious." ". . . but, notwithstanding the frequent complaints, which are justified by the losses sustained, the treatment of our cattle, of so much importance to the prosperity of our country, hath been universally restricted to those who are the most remarkably unqualified to undertake the charge. That the shoer of a horse should, by virtue of his trade, become equal to a task which, in order to its being perfectly performed, would require the skill of an Harvey and a Boerhaave, appears a paradox which could only have gained credit in an age of general ignorance and barbarism. . . . The incompetency of the persons to whom it has been abandoned has drawn contempt on the art itself. . . . The laws of the animal economy of our cattle are as various and as intricate as our own. . . . It requires the sacrifice of as many years to become a skilful veterinarian, as to become a skilful physician: the acquisition of the science and the practice of each is a task sufficient to engage one man's life. . . . The advantage of extending the influence of science to our farms, and of applying it to the preservation of our cattle, cannot be made to appear more sensibly, than by considering the ravages sometimes made among them by contagious and epizootic diseases. . . . The treatment of the diseases of animals being taught scientifically, men of liberal education will cease to look on veterinary medicine as a mean and degrading profession. . . . If we observe the dangerous practice of farriers, in their surgical operations, we shall see them daily sacrificing horses, by boldly mangling the organised parts of the body, without knowing anything of its structure. . . ." (*Veterinarian*, 1831. **4.** 98).

How disastrously Hunter's plans miscarried, largely through his own death soon after the above words were written, by the time when, in 1828, the two journals, Bracy Clark and F. C. Cherry's *Hippiatrist* and W. Percivall and W. Youatt's *The Veterinarian* simultaneously appeared to redeem the abject state into which the veterinary art had fallen, through a bad system of veterinary education, for which Astley Cooper and Edward Coleman were to blame, is revealed in the following passage in the latter journal (*Veterinarian*, 1828. **1.** 369): ". . . In some favoured situations, a few veterinarians, whose education, connexions, talents, and conduct, enforce respect, occupy that rank in life to which they are entitled; but, generally speaking, they are little distinguished from the farrier and the cow-leech. . . ."

The editorial appearing in the issue of *The Veterinary Record* a fortnight ago (August 20th) says towards its conclusion, ". . . the 'Good Veterinarian' has at last come to his own. . . ." That is, it has taken from 1793 to 1949 for what was said by that great, good, and skilful man, John Hunter to come true—that is, again, if as was said there, we now do our duty. Hunter has recently been proclaimed to be "the father of the veterinary profession in Britain." He can be regarded as such if it is confessed that meanwhile, through no fault really of its own, it has been something of a "prodigal son."

I thank Mr. Hughes for his timely check.

Yours faithfully,

University of London Club,
21, Gower Street,
London, W.C.1.
August 29th, 1949.

J. T. Edwards.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
August 1st to 15th, 1949	8	—	15	—	1	—
Corresponding period in—						
1948	7	—	15	—	2	—
1947	8	—	42	—	—	2
1946	4	1	—	2	—	9
Jan. 1st to Aug. 15th, 1949	122	11	352	—	29	5
Corresponding period in—						
1948	62	—	230	1	31	22
1947	63	103	696	1	35	19
1946	64	31	—	7	39	297

NOTE.—The figures for the current year are approximate only.

* Excluding outbreaks in Army Horses.